



# Preliminary Site Investigation

## Bays Port Shore Power Project – White Bay Cruise Terminal

Port Authority of New South Wales

29 August 2024

311012-01011





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**PROJECT 311012-01011: Preliminary Site Investigation**

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## Executive Summary

Worley Consulting has been engaged by Port Authority of New South Wales (Port Authority) to prepare a Preliminary Site Investigation (PSI) to accompany the Review of Environmental Factors (REF), for the development of a landside electricity supply for cruise ships at White Bay Cruise Terminal (WBCT), as part of the Bays Port Shore Power Project (the Project) at the Bays Port Precinct (the Precinct), New South Wales (NSW).

The purpose of the PSI is to evaluate the potential for soil contamination as a result of past and present, onsite or offsite activities, and provide recommendations for the management of contaminated soils and materials (if any) during the construction and/or operation phases of the proposal.

### Proposal Overview

The Project is to be delivered in two (2) stages:

- Stage 1: White Bay Shore Power - WBCT connection consisting of the following Work Packages:
  - *Work Package 1: Power supply provision from the Rozelle Ausgrid substation to the Precinct to support all stages of the Project, including installation of high voltage connection kiosk (to be undertaken by Ausgrid and Ausgrid's Accredited Service Providers).*
  - Work Package 2: Shore power equipment supply and installation for WBCT berth (including design of internal electrical distribution network).
  - Work Package 3: Internal network civil works to support Stage 1 infrastructure.
- *Stage 2: Glebe Island Shore Power – Glebe Island 1, 2, 7 and 8 connections (to be undertaken in multiple phases and is not part of this proposal; scope and phasing to be assessed and delivered at a later stage).*

The scope of works for the REF (the proposal) relates to Stage 1: WBCT Shore Power, Work Package 2 and 3 only, as outlined above.

Stage 1: WBCT Shore Power, Work Package 1, is excluded from the REF (the proposal) as the scope relates to the new supply and distribution of electricity to the Bays Port precinct and is governed by the *Electricity Supply Act 1995* (NSW) where Ausgrid is the Determining Authority. Planning approval associated with Work Package 1 scope and timeline will be conducted separately in accordance with Ausgrid's Environmental Assessment Guidelines (NS174B) and Part 5 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) which generally applies to works for the purpose of an electricity transmission or distribution network.



## Summary and Conclusions

Based on the information gathered during the desktop review and the observations made during the site inspection, it is concluded:

- Potential exists for the presence of potential asbestos containing materials (PACMs) and other hazardous materials within the internal and external areas of the decommissioned Administration Building and Canteen and toilet block at White Bay berth 5 which is proposed for demolition. Any hazardous materials uncovered would be identified, removed and disposed of in a controlled manner.
- Potential for contaminated soils to be present in fill areas across the site from historical land reclamation, importation of fill materials, general industrial land uses, railway corridors, industrial operations associated and the importation of waste from nearby industrial facilities when undertaking future excavation works. These relatively shallow excavations would produce waste spoil material which would require classification and disposal offsite.
- Any spoil excavated below the water table may need to be managed on site for potential acid sulphate soils prior to disposal or reuse in an appropriate manner. However, based on the volumes of excavation and earthworks proposed, the risk of acid sulfate soils being oxidised is considered negligible.
- There are expected to be minimal contamination risks during operation with the application of periodic maintenance.
- The site can be made suitable for the proposal, subject to the implementation of the recommended mitigation measures below.

Worley Consulting recommends the following mitigation measures:

- Hazardous materials survey of the decommissioned Administration Building and Canteen and toilet block at White Bay berth 5 be undertaken prior to its demolition to determine the presence and extent of PACMs (if any) and management requirements.
- Spoil generated during excavation is to be stockpiled temporarily on site and waste classification of the material be completed in accordance with NSW EPA Waste Classification Guidelines (EPA, 2014). Stockpiles of excavated material are to be securely placed in the vicinity of the excavation areas, separated from stormwater drains and vehicle access areas.
- Excavated material will be disposed of to an appropriately licenced waste facility or to a development lawfully able to accept the material, in accordance with the classification of the waste under the EPA Waste Classification Guidelines.
- Controls to manage soil erosion and dust generation will be implemented in accordance with a project-specific Construction Environmental Management Plan.

## Acronyms and Abbreviations

Acronym/abbreviation	Definition
APEC	Areas of Potential Environmental Concern
CES	Consulting Earth Scientists
CLM	Contaminated Land Management (Records)
CLM Act	<i>Contaminated Land Management Act 2017 (NSW)</i>
CMS	Cable Management System
CMS	Cable Management System
Col	Contaminates of Interest
COPCs	Constituents of Potential Concern
CSM	Conceptual Site Model
DCCEEW	Department of Climate Change, Energy, the Environment and Water (NSW)
Eastern Harbour City SEPP	State Environmental Planning Policy (Precincts—Eastern Harbour City) 2021
EPA	NSW Environment Protection Authority
GI-8	Glebe Island 8 berth
HVC	High voltage connection
OCPs	Organochlorine Pesticides
OPS	Onshore Power Supply
PACMs	Potential asbestos containing materials
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
POEO	<i>Protection of Environment Operations Act 1997</i>
Port Authority	Port Authority of New South Wales
Project	Bays Port Shore Power Project, including Stages 1 & 2
proposal	The proposed works assessed in this PSI, being Stage 1 Work packages 2 & 3 at White Bay Cruise Terminal (WBCT)
PSI	Preliminary Site Investigation
REF	Review of Environment Factors
RH SEPP	State Environmental Planning Policy (Resilience and Hazards) 2021
SEPP	State Environmental Planning Policy
SWRCP	Site Wide Remedial Concept Plan
(the) Precinct	The Bays Port Precinct



Acronym/abbreviation	Definition
TPH	Total Petroleum Hydrocarbons
VOCs	Volatile Organic Compounds
WBCT	White Bay Cruise Terminal

# 1 Introduction

## 1.1 Brief

Worley Consulting has been engaged by Port Authority of New South Wales (Port Authority) to prepare a Preliminary Site Investigation (PSI) to accompany the Review of Environmental Factors (REF) for the development of a landside electricity supply for cruise ships at White Bay Cruise Terminal (WBCT), as part of the Bays Port Shore Power Project (the Project) at the Bays Port Precinct (the Precinct), New South Wales (NSW).

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  - *Work Package 1: Power supply provision from the Rozelle Ausgrid substation to the Precinct to support all stages of the Project, including installation of high voltage connection kiosk (to be undertaken by Ausgrid and Ausgrid's Accredited Service Providers (ASPs)).*
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- *Stage 2: Glebe Island Shore Power – Glebe Island 1, 2, 7 and 8 connections (to be undertaken in multiple phases and is not part of this proposal; scope and phasing to be assessed and delivered at a later stage).*

The scope of works for the REF (the proposal) relates to Stage 1: WBCT Shore Power, Work Packages 2 and 3 only, as outlined above.

Stage 1: WBCT Shore Power, Work Package 1, is excluded from the REF (the proposal) as the scope relates to the new supply and distribution of electricity to the Bays Port precinct and is governed by the *Electricity Supply Act 1995* (NSW) where Ausgrid is the Determining Authority. Planning approval associated with Work Package 1 scope and timeline will be conducted separately in accordance with Ausgrid's Environmental Assessment Guidelines (NS174B) and Part 5 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) which generally applies to works for the purpose of an electricity transmission or distribution network.

The purpose of the PSI is to evaluate the potential for soil contamination as a result of past and present, onsite or offsite activities, and provide recommendations for the management of contaminated soils and materials (if any) during the construction and/or operation phases of the proposal. The PSI has been prepared in accordance with the NSW Environment Protection Authority's (EPA, 2020) publication titled *Consultants reporting on contaminated land: Contaminated Land Guidelines*. No site sampling was undertaken for the proposal.

The site is the area of works concerning the proposal and is based on the REF scope as shown in Figure 1-1.

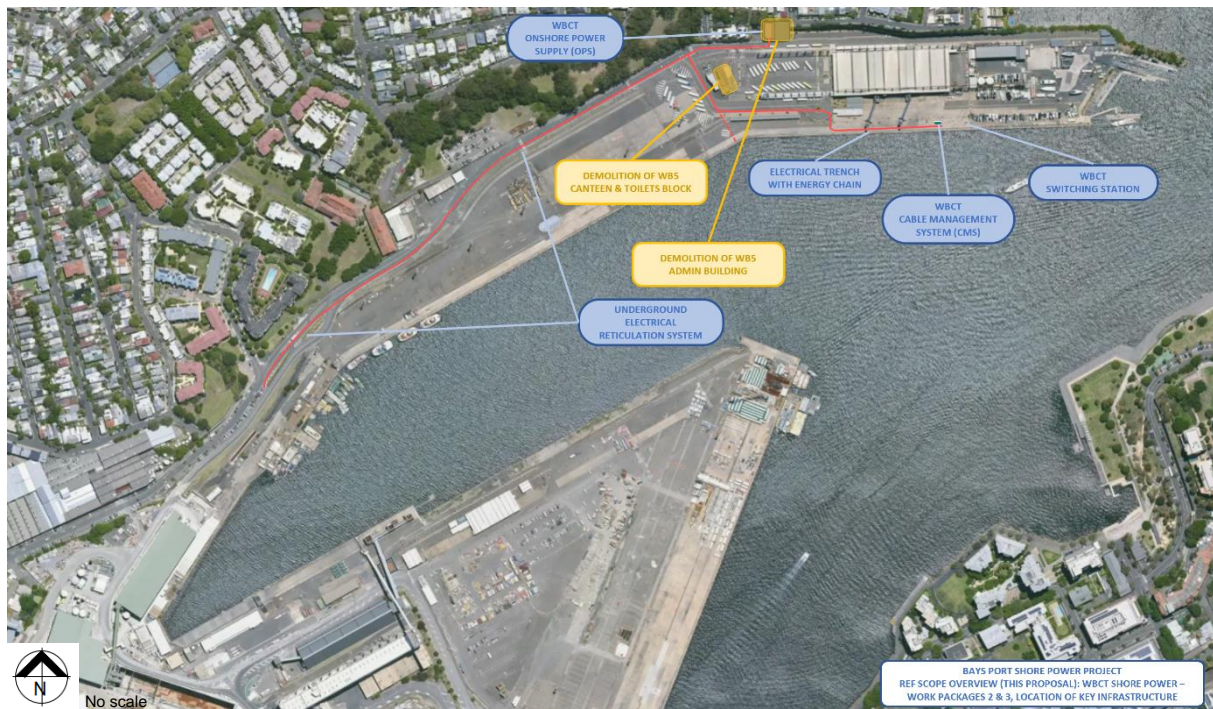


Figure 1-1 REF scope (Phase 1, Work Packages 2 and 3, only) (Source: Port Authority, 2024)

## 1.2 Methodology

The preparation of the PSI involved the following tasks:

- Detailed site history searches from public registers and historical aerial photographs.
- Review of Port Authority’s information regarding previous land uses and development plans/approvals, previous site investigations, existing planning constraints such as access, easements, zoning, flooding, flora and fauna issues, native title, archaeological issues, and any proposed planning amendments likely to impact the proposed activity.
- A search of State and Local Government records relating to the storage of dangerous goods and the presence of underground storage facilities at the Precinct.
- A review of the local geology and hydrogeology and potential for any site contamination to impact environmental receptors in the vicinity of the proposed activity.
- Review of information collected from a visual inspection to identify potential environmental concerns.
- Presentation of the findings of the PSI.
- Recommendations for mitigation measures to be implemented.

## 1.3 The Proposal

The proposal involves the installation of landside electricity supply for cruise ships at WBCT. A breakdown of the scope of work for the construction of Stage 1: White Bay Cruise Terminal (WBCT) Shore Power, Work Packages 2 and 3, is outlined below and is illustrated in Figure 1-1.



### Stage 1, Work Package 2:

Installation of Shore Power equipment at WBCT:

- Installation of Onshore Power Supply (OPS) units and switchgear units.
- Installation of mobile Cable Management System (CMS) unit at WBCT.
- Installation of energy chain in a trench along WBCT berth for a mobile CMS.  
*(Note: Coordination with Work Package 3 contractor is required).*
- Installation of switching station at WBCT.
- Installation of water-cooling system for WBCT OPS *(Note: Coordination with Work Package 3 contractor is required for the water supply to the system).*
- Construction of façade or visual treatment such as perimeter or green walls at WBCT OPS building (to be determined during detailed design stage).

### Stage 1, Work Package 3:

Internal network civil works at White Bay, including demolition and construction.

- Demolition:
  - Demolition of decommissioned Administration Building and Canteen and toilet block, at White Bay berth 5.
- Construction:
  - Construction of concrete foundation for high voltage connection (HVC) kiosk, WBCT OPS and switchgear units and WBCT switching station.
  - Construction of a shed for WBCT CMS unit. Location of CMS enclosure to be determined during detailed design stage.
  - Installation of piping system for the water-cooling system at WBCT (in collaboration with Work Package 2 scope).
  - Installation of electrical trenches and conduits, at a depth of 1.1-1.3m (approximate), and pits for power, control and communication cables at the following locations:
    - HVC kiosk at Port Authority's boundary *(Note: the HVC kiosk will be installed by Work Package 1 Contractor and not part of this proposal).*
    - White Bay berth 3 and 4, along the Port Access Road/services corridor.
    - WBCT, including along the berth for the energy chain installation.
  - Installation of cable conduits, power and control cables for the internal electrical reticulation network.



## 2 Site Information

### 2.1 Property Information

A summary of the property identification information is detailed below in Table 2-1.

Table 2-1 Summary of property information

Site Information	Details
Site Address	Robert Street and Somerville Road, Balmain, NSW 2041
Lot and DP	Lot 10 DP 1288503
Local Government Area	Inner West
Current Zoning	PAE Port and Employment under the <i>State Environmental Planning Policy (Precincts—Eastern Harbour City) 2021</i>
Current Occupier	Port Authority and its lessees
Proposed Future Land Use	Port facilities and mixed uses
Surface and Subsurface Infrastructure	<p>Multi-purpose port which allows for a variety of uses. Five operational shipping berths at White Bay (2-6) and four berths at Glebe Island (1, 2, 7 and 8).</p> <p>Other Port-based infrastructure includes the White Bay Cruise Terminal building (opened in 2013), silos and storage facilities, administration and amenities buildings, access roads, substations, hardstand and parking areas. Part of the Port land is currently being leased out as ancillary sites and contractor parking for the WestConnex and Sydney Metro West construction projects.</p> <p>There is no vegetation at the port.</p>

### 2.2 Site Condition and Surrounding Environment

Surrounding site uses are summarised in Table 2-2.

Table 2-2 Summary of surrounding environment

Site Information	Details
Summary of surrounding land uses	<p>North: Balmain residential area (elevated and physically separated from the site by a sandstone cliff and retaining wall) and Birrung Park</p> <p>South: ANZAC Bridge/Victoria Road corridor and various maritime infrastructure, accessed off James Craig Road</p> <p>East: Pyrmont residential area, Glebe Island Bridge</p> <p>West: Rozelle residential and industrial areas</p>
Topography	<p>The site has been extensively modified to function as a working port. The topography of the site is characterised by large escarpments reaching up to 18m (to the north of the WBCT), and flatter transition areas which step down to the port’s hardstand level. The north of the White Bay is bounded by residential areas of Balmain featuring mainly</p>



Site Information	Details
	single and double storey residences in Grafton, Vincent, Adolphus, Donnelly and Stephen Streets, which are elevated and physically separated from the site by a sandstone cliff and retaining wall.
Nearest Ecological Receptor	Waterbodies and their associated marine flora and fauna.

### 2.3 Hydrogeological Setting

The hydrogeological setting is summarised in Table 2-3.

Table 2-3 Summary of regional hydrogeological setting

Site Information	Details
Regional Geology	<p>A review of the Sydney 1:100,000 Geological Series Sheet 9130 (NSW Department of Mineral Resources, 1983) indicates that the site is generally underlain by three geological types (refer Figure 2-1 with map legends identified below):</p> <ul style="list-style-type: none"> <li>• Human-made fill (mf), typically comprising dredged estuarine sand and mud, demolition rubble, industrial and household waste.</li> <li>• Quaternary (Qha) aged silty to peaty quartz sand, silt and clay deposits with ferruginous and humic cementation in places and with common shell layers.</li> <li>• Hawkesbury Sandstone (Rh), typically characterised as medium to coarse-grained quartz sandstone with very minor shale and laminate lenses.</li> </ul>
Soil Landscape	<p>Based on a review of the Sydney 1:100,000 Soil Landscape Series Sheet 9130 (NSW Department of Land and Water Conservation, 1983), the site is shown to primarily lie within a disturbed landscape (identified on the map legend as 'XX') which are reported to generally comprise hummocky terrain, extensively disturbed by human activity, including complete disturbance, removal or burial of soil, variable relief and slopes (Figure 2-2). Additional features of disturbed landscapes may include quarries, land reclamation activities, tips and large cut and fill.</p> <p>Previous investigations have found that fill deposits comprise generally gravelly sand beneath the hard standing concrete or asphalt (Consulting Earth Scientists, 2010). These deposits were found to be underlain by sand or gravelly sand fill, which can vary in thickness across the areas of historical reclamation (Consulting Earth Scientists, 2010).</p> <p>The disturbed landscape profile generally comprises soil, rock, building and waste materials which may be considered limitations as these soils with high variability may pose engineering hazards, unconsolidated low bearing strength materials, low permeability, poor drainage, very low soil fertility, toxic materials and wind erosion hazard. Furthermore, disturbed landscapes may be considered sources of sediment and groundwater contamination.</p>
Registered Groundwater Bore Information	<p>Review of the NSW Natural Resource Atlas registered groundwater bore information completed during previous site assessments (conducted by JBSG, 2022) has identified two recorded groundwater bores cross gradient to the site located to the north of White Bay.</p>



Site Information	Details
Groundwater Flow Direction	Groundwater flow direction tends to flow in a southerly direction leading to White Bay. Approximate depth is 2.5m below ground level (Consulting Earth Scientists, 2010).
Surface water runoff	Surface water typically enters drainage, which is discharged into White Bay, water that does not enter a drainage system will run overland and discharge into White Bay.
Salinity	The site has not been mapped for salinity, however, the groundwater near the White Bay Power Station was described as brackish to marine saline conditions due to White Bay surface water intrusion (JBS&G, 2022).
Acid Sulfate Soils (ASS)	A review of the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) eSPADE acid sulfate soil risk mapping in September 2023 indicates that the majority of the site and, more broadly, the site is located within an area classed as 'disturbed terrain' (Figure 2-3).
Bushfire Prone Land	No mapped bushfire prone land exists at the site or in the vicinity of the site according to a search in September 2023 of the NSW Bushfire Prone Land mapping by NSW Rural Fire Service available on SEED.
Ecological Constraints	<p>There are several smaller scaled parklands which surround the site to the north including: Ewenton Park, Birrung Park and Vanardi Green.</p> <p>These sites have a mixed density of flora coverage and may include Threatened Ecological Communities such as Coastal Swamp Oak, Coastal Swamp Sclerophyll Forest, Coastal Upland Swamp, Eastern Suburbs Banksia and/or River-flat Eucalypt Forest. The presence of these Ecological Communities has not been ground truthed.</p> <p>The presence of bird, fish, frog and mammal species may also occur in these park areas as well as the surrounding water. Constraints and impacts caused by and to these species would stem from potential discharge of contaminants from the site through groundwater.</p>

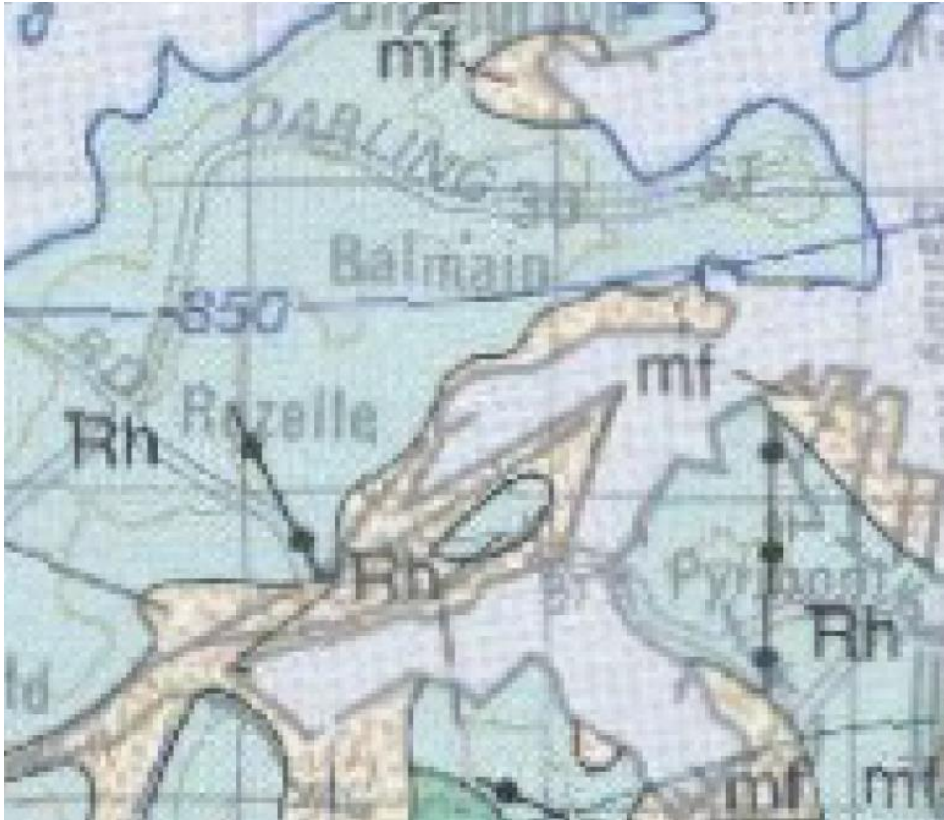


Figure 2-1 Sydney 1:100,000 Geological Series mapping (Source: NSW Department of Mineral Resources, 1983)



Figure 2-2 Sydney 1:100,000 Soil Landscape (Source: Department of Land and Water Conservation, 1983)



Figure 2-3 Acid sulfate soil probability (Source: NSW DCCEEW, 2023)

## 3 Site History

### 3.1 Public Record Search – EPA Registers

A search of NSW EPA public registers for the site address was undertaken to identify public records available relating to the site and/or nearby properties that have potential to act as a source of contamination. Results of the searches are summarised in Table 3-1.

Table 3-1 Search of EPA Registers

Source	Date of Search	Information Sought	The Site	Surrounding Properties (Within 0.5km)
NSW EPA Contaminated Land Records	10/11/2023	Orders made under part 3 of the <i>Contaminated Land Management Act 1997</i> (CLM Act)	Not Listed	None Listed
		Approved voluntary management proposals under the CLM Act	Not Listed	None Listed
		Site audit statements provided under section 53B of the CLM Act	Not Listed	None Listed
		Actions taken by EPA under section 35 or 36 of the <i>Environmentally Hazardous Chemicals Act 1985</i> (NSW)	Not Listed	Vanadi Pty Ltd. Issued between 1990-1994. Revoked 1994-1997.
<i>Protection of Environment Operations (POEO) Act 1997</i> NSW EPA's public register of licences, applications and notices	10/11/2023	EPA scheduled activities (Undertaken within 0.5km of the site)	Listed	White Bay 6 Marine Park Pty Ltd. POEO Licence, 2012 s.58 Variation Licence, 2021 Compliance Audit, 2015 Newcastle Ports Corporation POEO Licence, 2005 s.58 Variation License, 2022 Sydney Ports Corporation s.58 Variation Licence, 2015
NSW EPA public register of contaminated sites notified to NSW EPA under Section 60 of the CLM Act 1997	10/11/2023	Locations with areas of restricted groundwater extraction	Not Listed	None Listed

### 3.2 Public Record Search – Other Registers

A search of other public records available relating to the site and/or nearby properties that have potential to act as a source of contamination. Results of the searches are summarised in Table 3-2.

Table 3-2 Search of Other Public Registers

Public Record	Date of Search	Information Sought	Comments
Heritage Register (NSW State Heritage Inventory)	10/11/2023	Heritage information and/or items relevant to the site	Two heritage items located within part of the site: "Beattie Street Stormwater Channel No. 15" and "White Bay Power Station (Inlet) Canal".
Council Records (Inner West Council website)	10/11/2023	Record of ownership	N/A
Historical Aerial Images (SIX Maps and previous investigations)	10/11/2023	Historical Activities based on aerial photographs of the area	See Section 3.3 below.
Land Title Search (Port Authority records)	10/11/2023	Identify landowners and key events for the site	No major encumbrances.
Local Environmental Plans (NSW Legislation website)	10/11/2023	Reports and databases relevant to the site	Inner West LEP 2022
Underground Services (WSP Concept Drawings)	10/11/2023	The presence of any underground services in the area	The site contains extensive underground services (communications, drainage, electrical, gas, sewer, water and fuel).
Hazardous Materials (Port Authority records)	10/11/2023	The presence of hazardous materials	Port Authority maintains an Asbestos Register, where there are known asbestos around the port including in existing buildings.
Acid Sulfate Soils (ASS)(eSPADE)	10/11/2023	Presence of ASS on the site or in the area	See Section 2.3 above.
Salinity (SEED)	10/11/2023	Presence of Salinity	See Section 2.3 above.
Bushfire Prone Lands (SEED)	10/11/2023	Occurrence of bushfire prone land on site or adjacent areas	The zone is not Bushfire Prone Land.



### 3.3 Historical Activities Identified

A summary of historical land uses and development activities that have occurred at the site is provided below in Table 3-3. Further historical information is contained in the Statement of Heritage Impact.

Table 3-3 Summary of Historical and Aerial Photograph Review

Date	Site	Site Surroundings
Pre-1788	Prior to European settlement, the areas of White Bay and Glebe Island were inhabited by the Gadigal and Wangal people. Wangal territory began at Memel (Goat Island) and covered the Balmain Peninsula and continued west along the Parramatta River.	
Late 1700s	No major changes.	The land of Glebe Island was originally granted to Richard Johnson, chaplain of the First Fleet. Land given to the Church of England was known as a 'glebe.'
1800-1850	The predominant land characteristics during this time could be described as largely estuarine mudflats which were mostly inundated at high tide, with the rocky foreshore of Glebe Island towards the south.	William Balmain Estate was granted in 1800 which covered the entirety of Balmain, Birchgrove and the majority of Rozelle.
1850-54	Glebe Abattoir approved and constructed, including buildings designed by Edmund Blacket, Government Architect, as the colonial authorities sought to relocate slaughterhouses away from the city. Works included excavation to level the site, and structures including a wharf, roads, a causeway, and livestock slaughterhouses.	The predominant land characteristics during this time could be described as largely estuarine mudflats which were mostly inundated at high tide.
1860	During this time, Rozelle underwent subdivisions, and the erection of waterfront industries began to sprout. Both the Rozelle and Balmain peninsula was subdivided during this period, and maritime and noxious industries commenced development along the White Bay and Glebe Island foreshores. No reclamation efforts were made to most of the head of White Bay at this time, however, several rear yard buildings were erected in the far western portion of the site that sat above the high tide line. 1890 saw Mullens Street be extended south from the intersection of Parsons Street to the then Abattoir Road over the head of White Bay, with new property developments facing off from Mullens Street in the western portion of the site.	The first public abattoir opened on Glebe Island. Wharves were built to service the meat canning and export trade.



Date	Site	Site Surroundings
1862	No major changes.	The first bridge connecting Glebe Island to Pyrmont, and the city, was built, called Blackbutts Bridge made from Tasmanian blackbutt timber.
1895	British soap manufacturer William Level of Lever Brothers established a production site and reclaimed some of the White Bay shoreline during this period.	No major changes.
1899	No major changes.	Blackbutts Bridge collapsed, reportedly due to an unsecured ballast.
1903	No major changes.	A new four-lane swing bridge opened, which was amongst the first electrically operated opening bridge in the world.
1912	From 1912, the Sydney Harbour Trust (later Maritime Services Board) planned the broadside wharfage at Balmain East and along the southern foreshore of Balmain which also included Glebe Island. Glebe Island also became the site of a grain elevator and tall concrete silos which commenced operations in 1921. Construction of the now decommissioned White Bay Power Station also began from 1912 – 1917 during which time, the turbine hall, switch house and one boiler house were built.	The New South Wales Railway Commissioners commenced construction of the White Bay Power Station, to power the local rail network. The White Bay site allowed for rail and dock facilities for coal delivery and had unlimited access to circulating water. The power station is now over 100 years old and remains historically significant as the only existing power station with machinery and equipment to demonstrate how electricity was produced prior to the 1950s.
1918-1921	Reclamation and wharf works, begun 1913-16, continues, using spoil from construction excavation.	New bulk handling grain silos were built to assist with processing grain, handling bagged and bulk wheat; these silos were demolished in 2000. The site of the previous silos is now used as a cement terminal.
1941-1945	No major changes.	Glebe Island became the principal staging area for thousands of US troops during World War II. Australian troops leaving to join the British Commonwealth Occupation Force also departed from Glebe Island and White Bay. The surrounding area is made up of mostly factories and residential housing.
1966	No major changes.	The Maritime Services Board developed a ten-year plan for the development of new container berths.
1969	White Bay Container Terminal opened following extensive land reclamation.	No major changes.



Date	Site	Site Surroundings
1975	No major changes.	Decommissioning of the White Bay Power Station began and was completed in 1982.
1982	No major changes.	Some lots of land from the original John Booth's Steam Sawmill were transformed into White Bay Park by the Leichhardt Council. The park opened in 1982 but was later renamed as Birrung Park, acknowledging the original owners of the land.
1984	No major changes.	Glebe Island Container Terminal ceased operations; facility relocated to Port Botany.
1995	No major changes.	The old Glebe Island bridge was replaced by Anzac Bridge, a new cable-stayed structure.
2008	No major changes	Processing of car imports at Glebe Island was relocated to Port Kembla in 2008. Most of the factories have been demolished and replaced with more housing and greenery
2010-2011	No major changes	No major changes.
2012	Some construction work is beginning to be undertaken near existing structures previously erected in 2009	No major changes.
2013	White Bay Cruise Terminal opened. The terminal is also used on non-ship days for functions, exhibitions, filming and other events.	No major changes.
2014	Construction beginning at various sections of White Bay area	No major changes.
2015	No major changes	No major changes.
2016	Building materials are stored in the southwest of the site	No major changes.
2017	Building materials are no longer found on the site	No major changes.
2018	No major changes	No major changes.
2019	No major changes	No major changes.
2020	No major changes	Robert Street has been further developed running along the site.
2021	The site has building materials stored on the site	No major changes.
2022	The Bays West Stage 1 master planning and rezoning completed ((White Bay Power Station (and Metro) Sub-Precinct), adjacent to the Glebe Island Silos). The rezoning outlines planning	No major changes.



Date	Site	Site Surroundings
	controls to guide the development of a new centre for Bays West around the future Bays Metro station and White Bay Power Station.	
2023 - current	No major changes	No major changes.

### 3.4 Statutory and Planning Framework

The following section provides an overview of the key NSW legislation and planning instruments relevant to the site.

#### 3.4.1 Contaminated Land Management Act 1997

The site has not been declared under the *Contaminated Land Management Act 1997* (NSW) as being significantly contaminated.

#### 3.4.2 Waste Avoidance and Resource Recovery Act 2001

The proposal would apply the hierarchy under the *Waste Avoidance and Resource Recovery Act 2001* (NSW) when devising and implementing waste management procedures using the principles of waste avoidance, waste reduction and waste re-use or waste recycling.

#### 3.4.3 State Environmental Planning Policy (Resilience and Hazards) 2021 (RH SEPP)

Chapter 4 of the RH SEPP applies to the whole of the State and aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment by specifying when consent is required, and when it is not required, for a remediation work. In accordance with Chapter 4 of the RH SEPP, a consent authority must not consent to the carrying out of any development on land unless it has considered whether the land is contaminated and, if the land is contaminated, it is satisfied that the land is suitable in its contaminated state for the purpose for which the development is proposed to be carried out. The PSI has considered the provisions of the RH SEPP.

#### 3.4.4 State Environmental Planning Policy (Precincts—Eastern Harbour City) 2021 (Eastern Harbour City SEPP)

The site is zoned part PAE Port and Employment under the Eastern Harbour City SEPP. The site is subject to the planning principles of regional significance for City West in Section 4.8 of the Eastern Harbour City SEPP. The purpose of these planning principles is to align potential development relating to land within City West (whether or not within a Precinct) with the considerations of the consent authority to upkeep a high level of consistency. The principles relating to environmental issues are outlined in Table 3-4 and have been considered during preparation of this PSI in relation to waste management.



Table 3-4 Planning Principles of regional significance for City West

Planning Principle	Detail
Environmental Issues	<p>Development in City West is to ensure a high level of environmental quality by addressing issues of air quality, noise levels, wind conditions, access to light and sunshine, privacy, soil conditions and water quality.</p> <p>Development in City West is to have regard to the principles of ecologically sustainable development (namely, the precautionary principle, inter-generational equity, conservation of biological diversity and ecological integrity, and improved valuation, pricing and incentive mechanisms).</p> <p>Development in City West is to—</p> <ul style="list-style-type: none"> <li>• incorporate measures to minimise waste, including (where practicable) utilising recycled materials and renewable building resources, recycling building and demolition wastes, and providing facilities for recycling and composting, and</li> <li>• implement total water cycle management, including (where practicable) reducing consumption of potable water, treating and recycling wastewater for re-use, minimising site run-off and stormwater generation, and reusing stormwater, and</li> <li>• incorporate measures to conserve energy, including (where practicable) reducing energy consumption, and increasing inherent energy efficiency through design and materials selection, and</li> <li>• promote biological diversity by measures that include (where practicable) increasing habitat through appropriate retention, planting and maintenance of native flora considered representative of the locality, and</li> <li>• complement and reinforce the development and use of the existing and planned integrated public transport, pedestrian and cycling networks in City West.</li> </ul>

### 3.5 Previous Investigations

Extensive previous assessments have been prepared for the wider Precinct, particular for the White Bay Power Station which has required significant remediation. The following section provides a summary of the key previous assessments.

#### 3.5.1 Consulting Earth Scientists (CES) (2010), Summary of Site Contamination Reports, White Bay Passenger Terminal

CES (2010) undertook a review of existing contamination assessments undertaken for the WBCT and surrounds and provide advice on their relevance and adequacy and the likely risk posed by the extent and degree of any contamination. Based on the areas that had been previously investigated, CES (2010) considered that the WBCT site presented minimal risk to the environment and human health. CES (2010) noted for areas not investigated, the potential exists for contaminating materials to be present within the underlying fill. CES (2010) concluded that where subsurface conditions are consistent with the previous investigations, the site is likely to be deemed suitable for the proposed development (with respect of contamination).



### **3.5.2 JBS&G (2015) Targeted Site Investigation, The Bays Precinct**

JBS&G (2015), engaged by UGNSW for site contamination assessment in the Bays Precinct, conducted a comprehensive investigation to support the development of a Site Wide Remedial Concept Plan (SWRCP) for future rezoning. The investigation included targeted fieldwork in the WBPS portion, involving soil, groundwater, soil vapour, and ground gas sampling. Analysis of identified Contaminants of Potential Concern (COPCs) revealed minimal widespread contamination, with only localized issues such as lead in fill material. Groundwater characteristics were generally brackish, with no significant methane detections but low concentrations of carbon dioxide. The report concluded that while no widespread contamination was identified, specific areas required further consideration for future land use suitability. The report recommended further evaluation of the data in conjunction with existing information for broader decision-making on management and remediation requirements for future development areas across the Precinct.

The investigation confirmed the absence of significant and widespread contamination issues at the WBPS Study Area, providing a basis for the SWRCP. The fieldwork revealed fill material with diverse composition underlying the site, with potential Asbestos-Containing Material (ACM) noted in areas with building demolition waste. Groundwater, though brackish, did not show significant contaminant levels, except for isolated instances of lead, nickel, and benzo(a)pyrene exceeding thresholds. Volatile contaminant concentrations in soil, soil vapour, and groundwater did not indicate unacceptable risks to human health for current or future land uses. The report recommended further evaluation of groundwater and ground gas conditions during future detailed assessments, emphasizing the need for ongoing monitoring and potential management measures. Overall, the investigation provided sufficient site characterization information to develop a high-level strategy for managing contamination risks at the site in line with future development plans.

### **3.5.3 Senversa (2021) Interpretive Contamination Investigation, Sydney Metro West White Bay**

Senversa (2021) was engaged by Sydney Metro to undertake a site contamination investigation at the Sydney Metro Stage 2 Works Area at White Bay to establish baseline conditions for site contamination and groundwater conditions (Port Authority land only) upon commencement of the licence for Sydney Metro's use of the site. The scope of intrusive investigations comprised soil sampling at 70 test pit/borehole locations in addition to two surface samples and one stockpile sample; and groundwater sampling at 10 new groundwater monitoring wells and 17 existing wells.

The identified contamination levels in soil and groundwater were found to be generally consistent with previous investigations and attributed to potentially contaminating activities including historical infilling (both from land reclamation and anthropogenic waste material predominantly from the power station and former railways), material/waste handling, maintenance activities and firefighting at the power station, railway use, port activities and hydraulically upgradient commercial/industrial activities.

### **3.5.4 JBS&G (2022) Environmental Site Assessment**

JBS&G (2022) was engaged by DPE to complete an Environmental Site Assessment (ESA) for the properties that comprise the White Bay Power Station (WBPS) and Metro Station Sub-Precinct to support the rezoning of these sites. To identify potential contamination conditions required to be addressed in a Site Wide Remedial Concept Plan (SWRCP), a qualitative evaluation of the conceptual site model has been completed by JBS&G in 2022 and is shown in Table 3-5.



Table 3-5 WBPS and Metro Station CSM – Data Set Suitability Evaluation (JBS&G, 2022)

Areas of Potential Environmental Concern (APECs)	Constituents of Potential Concern (COPCs)	Potentially Impacted Media	Data Status	Comment/Conclusion
Contiguous fly ash area – including coal washing/settling tanks and area northeast of primary building	Heavy metals, TRH/TPH, PAHs and PCBs/dioxins	Fill, natural soil/rock, groundwater	Existing data complemented by more recent limited data sets has documented general contaminant characteristics. Further investigation will be required to close out the potential for dioxins	Data set suitable to guide the SWRCP on requirements to address impacts. Specific additional investigation would be required to better characterise material once a specific development proposal(s) has/have been formulated to assist with project planning and consent requirements
Transformer and Switchyard area	Heavy metals, TRH/TPH, PCBs, OCPs and VOCs	Surface soils, fill, natural soil/rock, groundwater and vapour	The existing data set has identified heavy fraction petroleum hydrocarbon impacts to fill material, natural soil/sandstone and groundwater. This has adequately characterised potential migration risks and identified the need for remediation of soil and groundwater impacts in this area	Data set suitable to guide the SWRCP on requirements to address known soil and groundwater impacts in this area of the site. Heritage and slope retention will also require consideration in development of a final site management/remediation strategy, which is anticipated to be undertaken by DPE Place Management, either in advance of or as part of development proposals for this portion of the site
Fill across site (ash included, but separate to contiguous fly ash area)	Heavy metals, TRH/TPH, VOCs, PAHs, OCPs, herbicides, PCBs, asbestos, ASS and ground gases	Fill (source), natural soil/rock, groundwater and vapour	Existing data complemented by more recent limited data sets has documented general contaminant characteristics. Whilst only limited soil vapour data is currently available, the absence of significant soil/groundwater volatile impacts indicate a low potential for occurrence of unacceptable soil vapour risks	Data set is considered suitable to guide the preparation of a SWRCP on requirements to manage identified impacts with future supplementary assessment to be designed dependent upon final land use scenarios
Coal storage and processing areas	Heavy metals, TRH/TPH, PAHs and PCBs/dioxins	Surface soils (fill), natural soil/rock, groundwater	Existing data complemented by more recent limited data sets has documented general contaminant characteristics	Data set is considered suitable to guide the preparation of a SWRCP on requirements to manage identified impacts



Areas of Potential Environmental Concern (APECs)	Constituents of Potential Concern (COPCs)	Potentially Impacted Media	Data Status	Comment/Conclusion
Ash handling yard	Heavy metals, TRH/TPH, PAHs and PCBs/dioxins	Surface soils (fill), natural soil/rock, groundwater	Existing data complemented by more recent limited data sets has documented general contaminant characteristics	Data set suitable to guide the SWRCP on requirements to address impacts
Railway passages	Heavy metals, TRH/TPH, VOCs, PAHs, phenolics, nitrates, ammonia and asbestos	Surface soils (fill), natural soil/rock, groundwater and vapour	Existing data complemented by more recent limited data sets has documented general contaminant characteristics. Limited soil vapour data available (JBS&G 2015) in addition to the absence of significant soil/groundwater volatile impacts indicates a low potential for occurrence of unacceptable soil vapour risks	Data sets suitable to guide the SWRCP on requirements to address impacts with future supplementary assessment to be designed dependent upon final land use scenarios
Boiler house 2 footprint	Heavy metals, TRH/TPH, PAHs and asbestos	Surface soils (fill), natural soil/rock, groundwater	Existing data has documented general contaminant characteristics associated with this APEC	Data sets suitable to guide the SWRCP on requirements to address impacts with future supplementary assessment to be designed dependent upon final land use scenarios
General inventory and warehouse building footprints	Heavy metals, TRH/TPH, PAHs, OCPs, PCBs and asbestos	Fill, natural soil/rock, groundwater	Existing data has documented general contaminant characteristics associated with this APEC	Data sets suitable to guide the SWRCP on requirements to address impacts with future supplementary assessment to be designed dependent upon final land use scenarios
Oil Storage tank footprints	Heavy metals (lead), TRH/TPH, VOCs, MAHs, PAHs, phenols and asbestos	Fill, natural soil/rock, groundwater and vapour	Existing data has documented general contaminant characteristics associated with this APEC. Whilst limited soil vapour data is currently available, the absence of significant soil/groundwater volatile impacts indicate a low potential for occurrence of unacceptable soil vapour risks	Data sets suitable to guide the SWRCP on requirements to address impacts with future supplementary assessment to be designed dependent upon final land use scenarios



### 3.6 Site Inspection

Two Worley Consulting environment consultants conducted a site inspection in conjunction with Port Authority representative on 6 September 2023 to make observations on the current site conditions. Table 3-6 is a summary of the site inspection with photographs taken during the site inspection in Figure 3-1 to Figure 3-4.

Table 3-6 Site Inspection Observations

Feature	Observation
Site Features	The site features a distinct open space bound by a steep sandstone cliff face and Birrung Park. Enclosed by a secured perimeter fence, residential buildings are situated in the neighboring areas. The predominant structural elements include a concrete and bitumen surfaces featuring car parking areas and single story structures which serve various purposes including the White Bay and Glebe Island berths. Additionally, the location also houses smaller boats for repairs, upgrades and other vessel related changes. The 'ecotech' air quality monitoring station is also found on the corner of Adolphus Street and Grafton Street.
Site Drainage	The site drains into White Bay which is a part of Sydney Harbour via drainage pipes.
Waste	Waste receptacles are available across the site.
Fill	The site contains extensive areas of reclaimed land with fill materials below the hardstand, car parking and road areas. The site also features remnant railway lines.
Asbestos Containing Material (ACM)	No internal site inspection was undertaken of the existing buildings; however, it is understood from Port Authority's Asbestos Register that some of the buildings and their components contain asbestos (e.g. pipes, cladding and electrical backing boards). Signs are generally displayed when asbestos is present.
Above Ground and Underground Storage Tanks	The nearest underground storage tanks, fuel dispensing lines and pumps is associated with the boat storage, service and refuelling area to the east of the WBCT at White Bay Berth 6 which is managed by a tenant of Port Authority.



Figure 3-1 View looking east to White Bay 5 (Source: Worley Consulting, 2023)



Figure 3-2 View looking west to the car park, White Bay 3 and 4 Canteen Building (Source: Worley Consulting, 2023)



Figure 3-3 View looking north to the decommissioned White Bay 5 Administration Building (Source: Worley Consulting, 2023)



Figure 3-4 View looking north to Robert Street (Source: Worley Consulting, 2023)



### 3.7 Potential for Contamination Identified

The following contaminants of interest (CoI) are associated with the historical use of the site. A review of these contaminants can be found in Table 3-7.

Table 3-7 Contaminants identified on-site and surrounding locations

Location	Potential Sources of Contamination	Potentially Contaminating Infrastructure/Activity	Contaminants of Interest
Onsite Source	Decommissioned Administration Building and Canteen and toilet block at White Bay berth 5	Potential asbestos containing materials (PACMs) and other hazardous materials in building materials	Asbestos, lead paint, Volatile organic compounds (VOCs)
Onsite Source	Potential for contaminated soils in fill areas across the site.	These include the use of fill during historical land reclamation, importation of fill materials, general industrial land uses, railway corridors, industrial operations associated and the importation of waste from nearby industrial facilities.	Total recoverable hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, Xylene and Naphthalene (BTEXN), Polycyclic Aromatic Hydrocarbons (PAHs), Metals, Organochlorine pesticides (OCPs), Polychlorinated biphenyls, (PCBs), Asbestos/fibre cement
Onsite Source	Potential for ASS	Potential to be present in marine and/or alluvial soil deposits isolated by land reclamation, areas where dredging of marine and/or alluvial sediments occurred during land reclamation, and current seabed areas adjoining the site boundaries.	ASS
Onsite Source and Nearby Source	Exhaust from light and heavy vehicles, vessels on site or nearby. Exhaust from nearby factories. Garbage.	Exhaust from on-site and nearby.	Polycyclic aromatic hydrocarbon (PAHs)
Onsite Source	Various including gas pumps, pesticides, cleaners, paints, spilled oil, and other potential on-site chemicals	Historical land reclamation, previous and current industrial and port land uses including fuel and oil/lubricant storage facilities, substations, buried waste and maintenance activities.	Total petroleum hydrocarbon (TPH), VOCs
Onsite Source	Used in products that resist heat, oil, stains, grease and water	Historical land reclamation, previous and current industrial and port land uses	Per- and polyfluoroalkyl substances (PFAS)



Location	Potential Sources of Contamination	Potentially Contaminating Infrastructure/Activity	Contaminants of Interest
		including any firefighting activities.	
Onsite Source	On-site pest control	Historical land reclamation, previous and current industrial and port land uses including specific spraying activities during/following cargo unloading at the wharves	OCPs, PCBs
Onsite Source	Antifouling agent in paint	Historical land reclamation, previous and current industrial and port land uses including vessel maintenance.	Tributyltin (TBT)



## 4 Preliminary Conceptual Site Model

The National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013 (NEPC 2013) identifies a Conceptual Site Model (CSM) as a representation of site related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The development of a CSM is an essential part of all site assessments.

NEPC (2013) identifies the essential elements of a CSM as including:

- Any known and potential sources of contamination and contaminants of concern.
- Potentially affected media (such as soil, sediment, groundwater, surface water, indoor and ambient air).
- Human and ecological receptors.
- Potential exposure pathways and any potential preferential pathways for migration.

The preliminary CSM prepared for the site and surrounds is presented below in Table 4-1.

Table 4-1 Preliminary CSM

Potential Sources of Contamination	Potentially Affected Media	Potential Pathways <sup>1</sup>	Human and/or Ecological Receptors
Decommissioned Administration Building and Canteen and toilet block at White Bay berth 5	Soil and indoor air	Dermal contact and ingestion with any identified hazardous materials, inhalation of vapors from any hazardous materials migrating upward	Construction site workers and visitors during building demolition and waste disposal.
Potential for contaminated soils in fill areas across the site	Soil, sediment, groundwater and surface water	Dermal contact with and ingestion of impacted soils/groundwater at shallow depths by future excavations. There is also the potential inhalation of vapors migrating upward and laterally from fill and/or natural soils.	Construction site workers, visitors, or occupants.
Potential for ASS	Soil, sediment, groundwater and surface water	Dermal contact with and ingestion of impacted soils/groundwater at shallow depths by future excavations (1-1.3m depth, depending on site conditions). There is also the potential inhalation of vapors migrating upward	Construction site workers, visitors, or occupants.

<sup>1</sup> In this assessment, preferential pathways refer to natural and/or human-made routes that facilitate the preferential migration of Contaminants of Potential Concern (COPC) in either liquid or gas form. Human-made preferential pathways are expected to be present across the site, particularly in areas characterized by previously disturbed fill material, below-ground infrastructure, and service easements.



Potential Sources of Contamination	Potentially Affected Media	Potential Pathways <sup>1</sup>	Human and/or Ecological Receptors
		and laterally from fill and/or natural soils.	
Exhaust from light and heavy vehicles, vessels on site or nearby. Exhaust from nearby factories. Garbage.	Ambient air	Potential inhalation of exhaust emissions.	Construction site workers, visitors, or occupants. Future site maintenance workers, site visitors, occupants and recreational users.
Various including gas pumps, pesticides, cleaners, paints, spilled oil, and other potential on-site chemicals	Soil, sediment, groundwater, surface water and ambient air	Dermal contact with and ingestion of impacted soils/groundwater at shallow depths by future excavations. There is also the potential inhalation of vapors migrating upward and laterally from fill and/or natural soils.	Construction site workers, visitors, or occupants. Future site maintenance workers, site visitors, occupants and recreational users.
Used in products that resist heat, oil, stains, grease and water	Soil, sediment, groundwater, surface water and ambient air		
On-site pest control	Soil, sediment, groundwater, surface water and ambient air		
Antifouling agent in paint	Soil, sediment, groundwater, surface water and ambient air		

## 5 Summary and Conclusions

Based on the information gathered during the desktop review and the observations made during the site inspection, Worley Consulting concludes the following:

- Potential exists for the presence of potential asbestos containing materials (PACMs) and other hazardous materials within the internal and external areas of the decommissioned Administration Building and Canteen and toilet block at White Bay berth 5 which are proposed for demolition. Any hazardous materials uncovered would be identified, removed and disposed of in a controlled manner.
- Potential for contaminated soils to be present in fill areas across the site from historical land reclamation, importation of fill materials, general industrial land uses, railway corridors, industrial operations associated and the importation of waste from nearby industrial facilities when undertaking future excavation works. These relatively shallow excavations would produce waste spoil material which would require classification and disposal offsite.
- Any spoil excavated below the water table may need to be managed on site for potential acid sulphate soils prior to disposal or reuse in an appropriate manner. However, based on the volumes of excavation and earthworks proposed, the risk of acid sulfate soils being oxidised is considered negligible.
- There are expected to be minimal contamination risks during operation with the application of periodic maintenance.
- The site can be made suitable for the proposal, subject to the implementation of the recommended mitigation measures below.

Worley Consulting recommends the following mitigation measures:

- Hazardous materials survey of the decommissioned Administration Building and Canteen and toilet block at White Bay berth 5 be undertaken prior to demolition to determine the presence and extent of PACMs (if any) and management requirements.
- Spoil generated during excavation is to be stockpiled temporarily on site and waste classification of the material be completed in accordance with NSW EPA Waste Classification Guidelines (EPA, 2014). Stockpiles of excavated material are to be securely placed in the vicinity of the excavation areas, separated from stormwater drains and vehicle access areas.
- All waste to be managed using the principles of avoid, reuse and recycle, in accordance with the waste hierarchy, and classified in accordance with NSW EPA Waste Classification Guidelines (EPA, 2014).
- A waste classification is required for all soil and soil impacted material that will require offsite disposal, including:
  - Assessment of material for waste classification prepared by a suitably qualified environmental consultant and comply with the NSW EPA Waste Classification Guidelines: Part 1 Classifying Waste (2009).
  - Building and demolition waste can be disposed offsite as pre-classified waste in accordance with NSW EPA Waste Classification Guidelines: Part 1 Classifying Waste



(2009). All building and demolition waste that is stockpiled with soil material will be required to be divided and classified separately.

- All other excavated material intended to be reused is to be managed in accordance with the *Protection of the Environment Operations Act 1997* (NSW) (PEEO Act). Excavated material and all waste will be disposed of to an appropriately licenced waste facility or to a development lawfully able to accept the material, in accordance with the classification of the waste under the EPA Waste Classification Guidelines.
- Controls to manage soil erosion and dust generation will be implemented in accordance with a project-specific Construction Environmental Management Plan.



## 6 References

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